# NATIONAL ANALYSIS OF CEE 2002 ENERGY STAR® HOUSEHOLD SURVEY

# FINAL REPORT

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#### **EXECUTIVE SUMMARY**

In the fall of 2002, the Consortium for Energy Efficiency (CEE) and a number of its members sponsored the third national household survey of consumer awareness of ENERGY STAR. Each year, the survey objectives have largely been the same, to collect national data on consumer recognition, understanding, and purchasing influence of the ENERGY STAR label, as well as data on messaging, product purchases, and information sources used by consumers in their purchasing decisions. CEE members in New England chose to supplement the national sample in their territories by conducting additional surveys in Massachusetts. As in the two previous years, CEE and the sponsoring members made the survey data publicly available.

This report discusses the results of the CEE 2002 ENERGY STAR Household Survey, building on prior years' survey information and focusing on the extent to which consumers recognized the ENERGY STAR label, understood its intended messages, and used (or were influenced by) the label on their energy-related purchasing decisions. Research questions of interest included:

- Where do consumers see or hear about the ENERGY STAR label?
- How does increased publicity impact ENERGY STAR label recognition, understanding, and influence?
- Which key messages about the ENERGY STAR label are consumers retaining?
- Do consumers demonstrate loyalty to the ENERGY STAR label?

# **Key Findings at the National Level**

- Forty-one percent of households recognize (with a visual aid) the ENERGY STAR label.
- Fifty-eight percent of households have a high or general understanding of the label.
- Of households that recognized the ENERGY STAR label and purchased a product in the last twelve months, 60 percent purchased an ENERGY STAR product.
- Considering households that recognized the label and those that did not (i.e., all households), 17
  percent of households knowingly purchased an ENERGY STAR-labeled product in the last twelve
  months.
- For 46 percent of households that knowingly purchased an ENERGY STAR-labeled product, the presence of the label influenced their purchasing decision "very much" or "somewhat." For another 21 percent of households, the presence of the label influenced their purchasing decision "slightly."
- Thirteen percent of households that knowingly purchased an ENERGY STAR-labeled product received a financial incentive. Ninety-two percent of these households would have been "very likely" (40 percent) or "somewhat likely" (52 percent) to purchase the labeled product without the financial incentive.
- Sixty-three percent of households that knowingly purchased an ENERGY STAR-labeled product were "very likely" or "somewhat likely" to recommend labeled products to a friend, and another 23 percent were "slightly likely."

# **Key Findings from Publicity-level Analyses**

- A larger proportion of households in high- than in low-publicity areas recognize the ENERGY STAR label, both with and without a visual aid. High-publicity areas are areas with active ENERGY STAR promotions by a regional program sponsor for two or more years.
- Considering households that recognized (with a visual aid) the label, a larger proportion of these households in high- than in low-publicity areas associate the ENERGY STAR label with products heavily promoted by regional program sponsors.
- A larger proportion of households in high- than in low-publicity areas have at least a general understanding of the ENERGY STAR label.

- Considering the messages of the ENERGY STAR label, a larger proportion of households in highthan in low-publicity areas associate the ENERGY STAR label with "a specific product." Also, a smaller proportion of households in high- than in low-publicity areas associate the label with "energy conservation."
- A larger proportion of households in high- than in low-publicity areas knowingly purchased an ENERGY STAR product within the last 12 months.
- Considering households that knowingly purchased an ENERGY STAR-labeled product, a larger
  proportion of these households in high- than in low-publicity were at least somewhat influenced by
  the label.
- Considering households that recognized (with a visual aid) the label, a larger proportion of these
  households in high- than in low-publicity areas have seen or heard something about ENERGY
  STAR on both TV commercials and utility mailings or bill inserts.

#### **Conclusions and Future Directions**

This third national study of household awareness of the ENERGY STAR label confirms key findings from the previous years' surveys: substantial portions of the U.S. households in the surveyed population recognize, understand, and are influenced by the ENERGY STAR label; and publicity from active regional energy efficiency program sponsors increases recognition, understanding, and influence of the label.

The overall trend for the 2002 data represents movement in the correct direction. A statistically measurable change or trend in the key indicators (e.g., recognition, understanding or influence of the ENERGY STAR label) may only be observable after several years (e.g., more than two years). For a change in awareness between 2001 and 2003 to be statistically significant at the 90 percent confidence level, awareness would need to change by at least 4.25 percentage points (assumes the standard error in 2003 is similar to the standard error in 2002).

In addition, measurable growth in the key indicators, such as recognition, understanding, and influence, is also affected by the survey's sample methodology, which focuses on respondents in the 57 largest media markets (representing 70 percent of TV households). While providing a valuable national analysis, this focus does not capture fully any increases in recognition and understanding in the smaller cities, which are well covered by regional programs. This is important to note, because the higher awareness in high publicity areas indicates that regional programs are effectively communicating the ENERGY STAR message.

#### INTRODUCTION

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This report discusses the results of the CEE 2002 ENERGY STAR Household Survey, building on prior years' survey information and focusing on the extent to which consumers recognized the ENERGY STAR label, understood its intended messages, and used (or were influenced by) the label on their energy-related purchasing decisions. Research questions of interest included:

- Where do consumers see or hear about the ENERGY STAR label?
- How does increased publicity impact ENERGY STAR label recognition, understanding, and influence?
- Which key messages about the ENERGY STAR label are consumers retaining?
- Do consumers demonstrate loyalty to the ENERGY STAR label?

This report has two parts. Part I includes an Executive Summary, this introduction, a summary of methods, key findings in four sections, and three appendices. Appendix A is the Detailed Methodology, Appendix B considers Demographic Information from the 2002 WebTV survey, and Appendix C provides a copy of the 2002 WebTV questionnaire. Part II presents the 2002 WebTV survey results by publicity category. In all cases, the results presented are properly weighted to obtain national estimates.

#### **METHODOLOGY**

From August through September 2002, the Consortium for Energy Efficiency (CEE) designed and fielded a household survey to obtain information at the national level on consumer awareness of the ENERGY STAR label. The survey was delivered by WebTV and was similar to the 2001 WebTV survey. As in the previous two years, CEE and the sponsoring members made the survey data publicly available.

The survey was a national survey. The sampling frame for the survey is all households in the largest Nielsen Designated Market Areas (DMAs) that account for approximately 70 percent of U.S. television households. In 2002, the 57 largest DMAs account for approximately 70 percent of U.S. television households. In addition, selected CEE members sponsored more intensive sampling (an oversample) for one state, Massachusetts, which is referred to here as a "sponsor area." For the sponsor area, the frame was not limited to the large DMAs, but included the entire state. Thus, the complete frame for the study was the combination of the largest DMAs and any portion of the sponsor area that fell outside these DMAs.

As in previous years' studies, to consider the effect of publicity on national awareness, the DMAs in the complete frame were classified by publicity category. The same publicity classification procedure used last year was used this year. In both 2001 and 2002, a DMA was classified as high publicity, low publicity, or other using the following criteria:

- **High publicity:** At least two *recent* years of *sustained* promotions and publicity from non-federal activities
- **Low publicity:** Federal campaign activities only and no *significant* regional program sponsor activities
- Other: All other DMAs

This classification procedure identifies three publicity categories and provides clear and verifiable definitions. The key working definitions are:

- **Recent:** The two years of activity must include the time of the survey fielding
- **Sustained:** The two years of activity must be continuous

• **Significant**: In addition to any direct federal publicity efforts<sup>1</sup>, publicity efforts must include a deliberate and multifaceted regional program sponsor investment in ENERGY STAR programming, such as direct marketing and promotional efforts

These definitions are sufficiently operational to be applicable to future survey efforts, and can be modified by simply increasing the duration of sustained high publicity.

The sample is stratified by publicity category and sponsor area. The three publicity categories and one sponsor area result in four strata. Households in the largest or parts of the largest DMAs that were not in the sponsor area, were assigned to one of the publicity category strata. Households in the sponsor area were assigned to the sponsor area stratum. Each publicity category stratum was allocated approximately 266 sampling points. The CEE members who funded the oversample for the sponsor area determined the number of sampling points allocated to their stratum.

This report presents the 2002 survey results at the national level and often by publicity category. The publicity category results provide evidence on the effectiveness of EPA's model to increase awareness of ENERGY STAR by supporting regional program sponsors. Results are presented on consumer recognition, understanding, and purchasing influence of the ENERGY STAR label, as well as on messaging, product purchases, and information sources used by consumers in their purchasing decisions.

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During the September 2001 to September 2002 period, EPA launched the first of three new television national Public Service Announcements (PSAs) as part of its *Change* campaign. The *Change* campaign also included continued distribution of several radio and print PSAs as a component of its overall outreach strategy.

#### RECOGNITION

In 2002, 41 percent of households recognized the ENERGY STAR label when shown the label (i.e., aided recognition). Approximately 28 percent of households correctly assessed whether or not they had seen or heard of the ENERGY STAR label without first being shown the label (i.e., unaided recognition).

For purposes of this analysis, respondents are said to recognize the ENERGY STAR label if they have seen or heard of the label before the survey. Recognition of the ENERGY STAR label was explored two different ways. "Aided" recognition was measured by showing the label and asking if the respondent had heard of or seen it before. Delivering the survey by WebTV also made it possible to measure "unaided" recognition. Unaided recognition was measured by asking this same question, but without showing the label. Both methods are useful measurements of label recognition, although unaided recognition is more conservative.

Recognition results for both this year's and last year's WebTV surveys are summarized in the next table. No statistically measurable changes in aided recognition of the ENERGY STAR label were found between 2002 and 2001. However, unaided recognition is higher this year than last year at a 5 percent level of significance (p-value=0.050).

# Recognition of the ENERGY STAR Label (Base = All respondents)

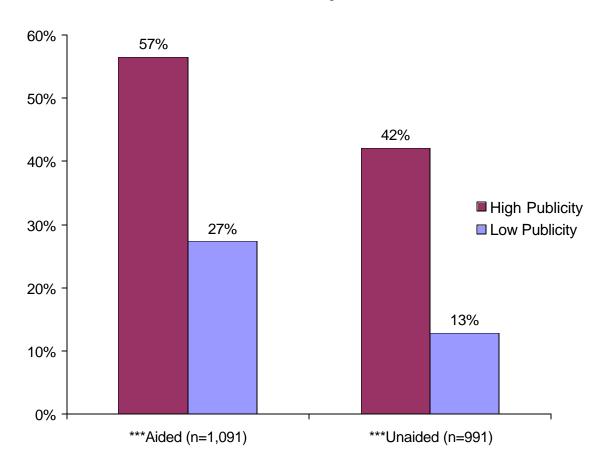
	WebTV				
	20	02	2001		
	Aided (n=1,091)	Unaided (n=991)	Aided (n=1,810)	Unaided (n=1,672)	
Recognize ENERGY STAR label	41%	28%	38%	24%	
Standard error	2.2%	2.1%	1.3%	1.1%	
# of households (millions)	71.22	65.82	69.77	64.23	

Note: The unaided recognition results are based on the question ES1: "Have you ever seen or heard of the ENERGY STAR label?" The aided recognition results are based on two questions. (1) ES3: "Is this the label you have seen or heard of before?," which is asked if ES1="yes." (2) ES6: "Now that you have had the opportunity to see the ENERGY STAR label, do you recall seeing or hearing anything about it before this survey?," which is asked if either ES1="no" or ES3="no."

# Recognition by publicity category

Both aided and unaided recognition were higher in high-publicity areas (areas with an active local ENERGY STAR program sponsored by a utility, state agency, or other organization for two or more continuous years) than in low-publicity areas. Aided, households in high-publicity areas recognized the ENERGY STAR label at 57 percent versus 27 percent in low-publicity areas. Unaided recognition was 42 percent in high-publicity areas compared with 13 percent in low-publicity areas. The differences in recognition, both aided and unaided, between high-publicity and low-publicity areas were highly statistically different from zero (p-value < 0.0001).

# Recognition of the ENERGY STAR Label by Publicity Category (Base = All respondents)

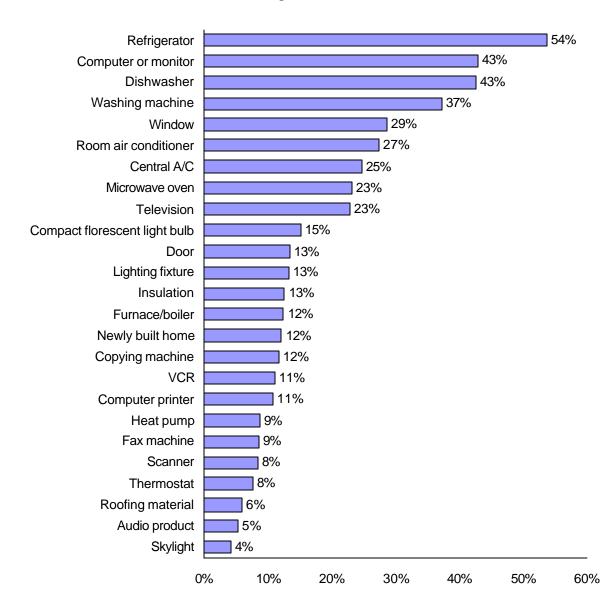


<sup>\*\*\*</sup>High- and low-publicity areas proportions are statistically different from each other at the 1 percent level of significance (p-value<=0.01).

## **Product associations**

Fifty-four percent of households have seen the ENERGY STAR label on refrigerators. Computers and dishwashers were the next most commonly associated products with the label, both at 43 percent, with washing machines not far behind at 37 percent. Windows, room air conditioners, central air conditioners, and televisions were in the 20 to 30 percent range. Products supported by regional programs, such as refrigerators, dishwashers, washing machines, and air conditioning equipment, show strong association with the ENERGY STAR label. The strong association of the label with computers and televisions is probably the combined effect of manufacturer labeling and the prevalence of these products in daily life. Twenty-three percent of households associate the ENERGY STAR label with microwave ovens, which do not in fact have an ENERGY STAR specification. However, microwave ovens were the least recognized of all the appliances.

## Product Association With the ENERGY STAR Label (Base = Recognize label aided, n=455)

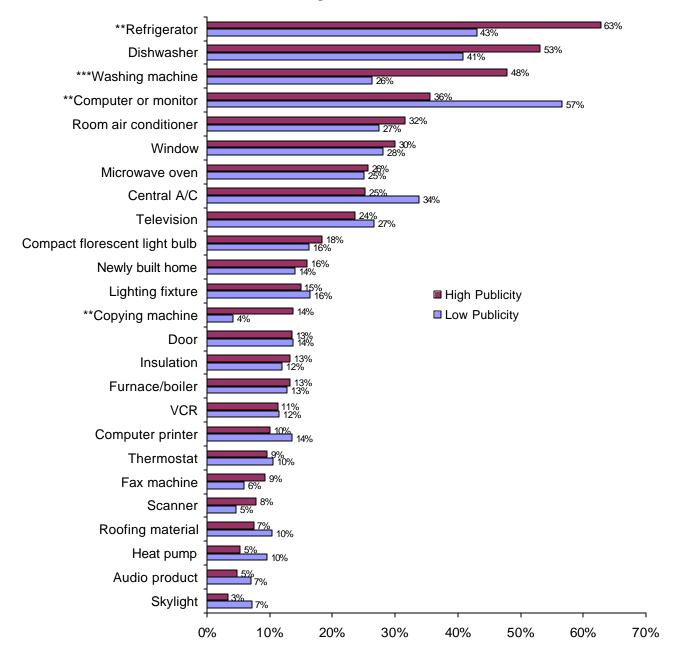


Note: Q5(a, b, and c): "Now we're going to ask you about several groups of products. As you review the list, please select each of the products, product literature, or packaging on which you have seen the ENERGY STAR label.

# **Product associations by publicity category**

For most products, the proportion of households that associated the product with the ENERGY STAR label was statistically the same for high- and low-publicity areas. For several products, however, the proportions were statistically different from each other at the 10 percent level of significance or better. A larger proportion of households in high- than in low-publicity areas associated the label with refrigerators, washing machines, and copy machines. On the other hand, a smaller proportion of households in high- than in low-publicity areas associated the ENERGY STAR label with computers. Regional energy efficiency program sponsors promoted refrigerators and washing machines heavily, but they did not promote computers heavily.

# Product Association With the ENERGY STAR Label by Publicity Category (Base =Recognize label aided, n=455)



<sup>\*\*\*</sup>High- and low-publicity areas proportions are statistically different from each other at the 1 percent level of significance (p-value<=0.01).

<sup>\*\*</sup>High- and low-publicity areas proportions are statistically different from each other at the 5 percent level of significance (p-value<=0.05).

#### **UNDERSTANDING**

In 2002, 58 percent of households have at least a general understanding of the ENERGY STAR label with 46 percent exhibiting a high degree of understanding. Understanding was probed by asking respondents what messages came to mind when they saw the ENERGY STAR label. Responses were categorized, coded appropriately, and further classified as high, general, or no understanding.

The results on understanding of the ENERGY STAR label for both this year's and last year's WebTV surveys are provided in the next table. The proportions of households with at least a general understanding of the ENERGY STAR label were similar between 2002 and 2001, 58 and 56 percent respectively.

Level of Understanding of the ENERGY STAR Label (Base = All respondents)

	WebTV		
Level of Understanding of the ENERGY STAR Label	2002 (n=1,168)	2001 (n=1,936)	
High understanding	46%	37%	
General understanding	12%	19%	
No understanding	42%	44%	
Total	100%	100%	
# of households (millions)	75.39	74.44	

Note: The level of understanding of the label are based on two questions. (1) If recognized the label unaided,

ES2: "What does the ENERGY STAR label mean to you?" (2) If did not recognize the label unaided,

ES4A1: "Type the messages that come to mind when you see the ENERGY STAR label?"

## **Understanding by publicity category**

Understanding of the ENERGY STAR label was greater in high- than in low-publicity areas. Sixty-three percent of households in high-publicity areas had at least a general understanding of the label compared with 54 percent of households in low-publicity areas. These two estimates of at least general understanding of the label were significantly different from each other (p-value=0.096).

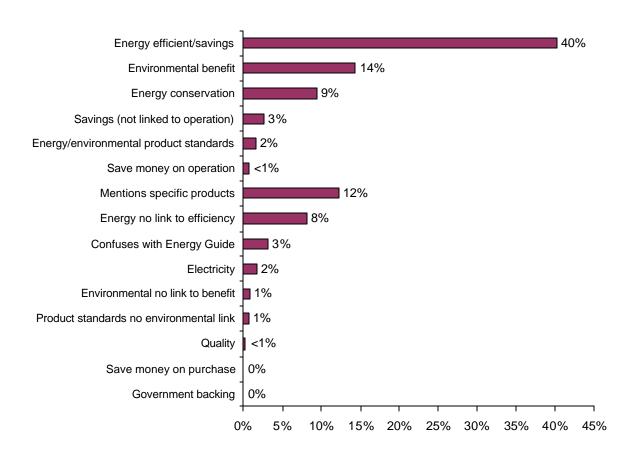
At Least a General Understanding of the ENERGY STAR Label by Publicity Category (Base = All respondents)

Publicity Category	% Households
High	63%
Low	54%
High-Low	9%
p-value	0.096

# Label messaging

Open-ended responses used to measure understanding are also an indicator of how effectively EPA communicates its messages through the ENERGY STAR label. By far the most common message associated with the label is "energy efficiency or energy savings." Forty percent of households associate the ENERGY STAR label with this message. "Environmental benefit" is the second most common message associated with the label, at 14 percent of households. Both of these messages are considered high understanding of the ENERGY STAR label.

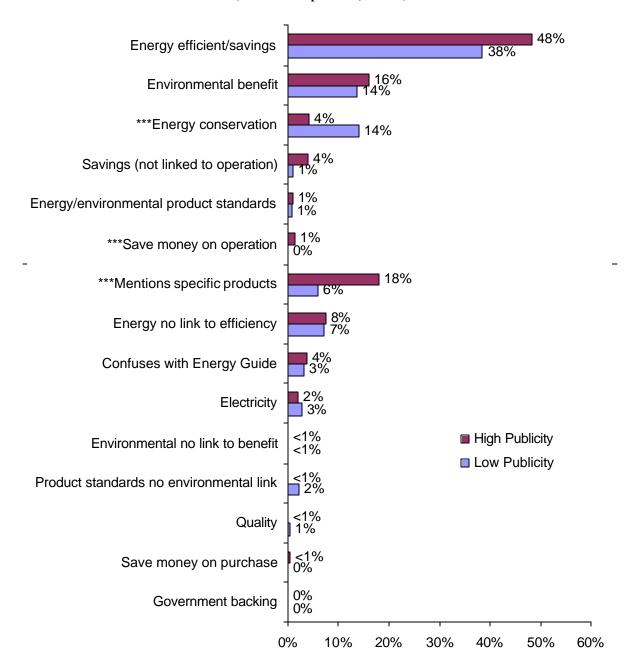
#### Messages of the ENERGY STAR Label (Base = All respondents, n=867)



## Messaging by publicity category

For most messages, the proportion of households that associated the message with the ENERGY STAR label was statistically the same for high- and low-publicity areas. For two messages, however, the proportions were statistically different from each other at the 10 percent level of significance or better. A larger proportion of households in high-publicity areas associated the label with "a specific product" (p-value=0.001). Perhaps this is because regional energy efficiency program sponsors promoted certain products heavily. On the other hand, a larger proportion of households in low-publicity areas associated the ENERGY STAR label with "energy conservation" (p-value=0.010).

# Messages of the ENERGY STAR Label by Publicity Category (Base = All respondents, n=1375)



<sup>\*\*\*</sup>High- and low-publicity areas proportions are statistically different from each other at the 1 percent level of significance (p-value<=0.01).

## Understanding by aided recognition

Households that recognize the ENERGY STAR label with a visual aid are more likely to have at least a general understanding of the label than those who do not recognize the label. Among households that recognize the label, 75 percent have at least a general understanding of the label, compared with households that do not recognize the label at 47 percent. The 28 percentage point difference between these two proportions was highly statistically different (p-value < 0.0001).

At Least a General Understanding of the ENERGY STAR Label by Aided Recognition of the Label (Base = All respondents, n=1,091)

Recognize ENERGY STAR Label Aided	% Households at Least General Understanding
Yes	75%
No	47%
Yes-No	28%
p-value	< 0.0001

#### **INFLUENCE**

The survey provided some information on consumers' decisions to purchase ENERGY STAR-labeled products, including the following:

- The influence of the label on purchasing decisions;
- The role of rebates or financing in decisions to buy ENERGY STAR products;
- The proportion of households, nationally, that recognize the ENERGY STAR label and actually purchased a labeled product; and
- The loyalty of ENERGY STAR purchasers.

#### **Influence of the ENERGY STAR label**

In 2002, for 21 percent of households that purchased an ENERGY STAR-labeled product, the presence of the label influenced their purchasing decision "very much." For 67 percent of households, the presence of the label influenced their purchasing decision to some extent ("very much," "somewhat," or "slightly").

The results on influence of the ENERGY STAR label for this year's and last year's WebTV surveys are provided in the following table. The proportions of households for which the ENERGY STAR label was at least somewhat influential in their purchasing decision were similar between 2002 and 2001, 46 and 49 percent respectively.

Influence of the ENERGY STAR Label on Purchasing Decisions (Base = Recognize label aided and ENERGY STAR purchasers)

	WebTV		
	2002 2001		
Response	(n=141)	(n=247)	
Very much	21%	23%	
Somewhat	25%	25%	
Slightly	21%	14%	
Not at all	33%	38%	
Total	100%	100%	
# of households (millions) 7.76			

Note: Q8: "For any ENERGY STAR labeled product(s) you purchased, how much did the presence or absence of the ENERGY STAR label influence your purchasing decision?"

## Influence of the ENERGY STAR label by publicity category

The purchasing decisions of 57 percent of households in high-publicity areas were at least somewhat influenced by the ENERGY STAR label, compared to 32 percent of households in low-publicity areas. The difference between these two proportions was significantly different from zero at the 10 percent level (p-value=0.082).

Influence of the ENERGY STAR Label on Purchasing Decisions by Publicity Category (Base = Recognize label aided and ENERGY STAR purchasers, n=141)

Publicity Category	Very much	Very much or somewhat	Very much, somewhat, or slightly
High	32%	57%	74%
Low	19%	32%	52%
High-Low	13%	25%	22%
p-value	0.312	0.082	0.189

## Rebate and financing influence

Thirteen percent of households that purchased an ENERGY STAR-labeled product received rebates or reduced-rate financing. A very large proportion of these households, 92 percent, would have been "very likely" or "somewhat likely" to purchase the labeled product if financial incentives had not been available.

Influence of Rebates and Financing on Purchasing Decisions (Base = Recognize label aided, ENERGY STAR purchaser, and received an incentive, n=30)

Likelihood Purchase ENERGY STAR Product Without Financial Incentive	% Households
Very likely	40%
Somewhat likely	52%
Slightly likely	2%
Not at all likely	6%
Total	100%
# of households (millions)	0.98

Note: Q10: "If rebates or reduced-rate financing had not been available, how likely is it that you would have purchased the ENERGY STAR-labeled product?"

#### **Purchases of ENERGY STAR**

In order to estimate the proportion of <u>all</u> households that knowingly purchased an ENERGY STAR product, the following three proportions were multiplied:

- the proportion of all households that recognized (aided) the ENERGY STAR label,
- of the households that recognized the label, the proportion that purchased a product, and
- of the households that recognized the label and purchased a product, the proportion that purchased an ENERGY STAR product.

With the result that 17 percent of all households knowingly purchased at least one qualifying ENERGY STAR product in the last twelve months.

Considering only households that recognized the label (rather than all households), in 2002, 60 percent of these households purchased at least one qualifying ENERGY STAR product in the last twelve months. This is similar to last year's WebTV result, 66 percent.

Purchased ENERGY STAR (Base = Recognize label aided and purchaser)

	WebTV		
	2002 2001 (n=228) (n=373)		
Purchased ENERGY STAR Product	60%	66%	
# of households (millions)	13.65	12.62	

Note: Q7: "For any of the products you purchased, did you see the ENERGY STAR label (on the product itself, on the packaging, or on the instructions)?"

# Purchases of ENERGY STAR by publicity category

A higher proportion of <u>all</u> households knowingly purchased an ENERGY STAR product in high-publicity areas than in low-publicity areas. Twenty-five percent of all households in high-publicity areas knowingly purchased an ENERGY STAR product compared with 11 percent of all households in low-publicity areas. These two proportions were highly statistically different from each other (p-value=0.007).

# National Household Market Penetration of ENERGY STAR Products by Publicity Category (Base = All respondents)

Publicity Category	% Households
High	25%
Low	11%
High-Low	13%
p-value	0.007

## **Loyalty to ENERGY STAR**

In 2002, 63 percent of households that purchased an ENERGY STAR-labeled product would be "very likely" or "somewhat likely" to recommend labeled products to a friend. Furthermore, only 14 percent of households would be "not at all likely" to recommend ENERGY STAR products to a friend.

The results on loyalty to the ENERGY STAR label for both this year's and last year's WebTV surveys are shown in the next table. The proportions of households at least somewhat likely to recommend labeled products to a friend were similar between 2002 and 2001, 63 and 65 percent respectively.

Loyalty to ENERGY STAR
(Base = Recognize label aided and ENERGY STAR purchasers)

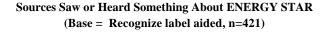
	WebTV		
Likelihood Recommend ENERGY STAR Products	2002 (n=121)	2001 (n=212)	
Very likely	39%	33%	
Somewhat likely	24%	32%	
Slightly likely	23%	18%	
Not at all likely	14%	16%	
Total	100%	100%	
# of households (millions)	6.27	7.08	

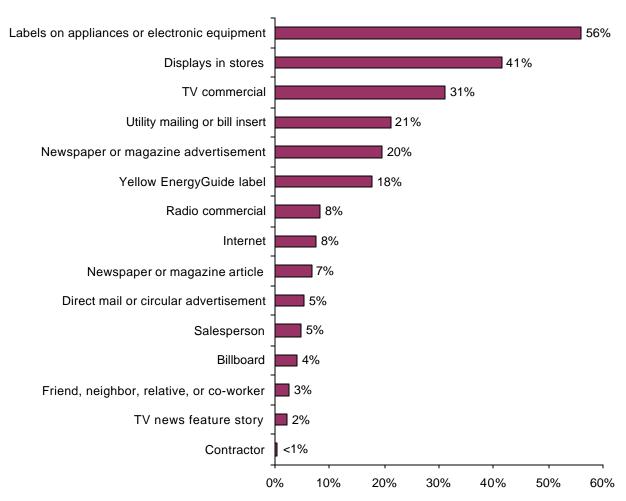
Note: Q11: "How likely are you to recommend ENERGY STAR-labeled products to a friend?"

#### **INFORMATION SOURCES**

#### Sources seen

Fifty-six percent of households have seen something about ENERGY STAR on appliance or electronic equipment labels, followed by store displays at 41 percent. Next, 31 percent of households have heard or seen something about ENERGY STAR on TV commercials. After these three sources, about 20 percent of households have seen something about ENERGY STAR on utility mailings or bill inserts; newspaper or magazine advertisements; or EnergyGuide labels.

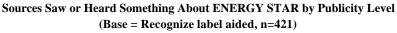


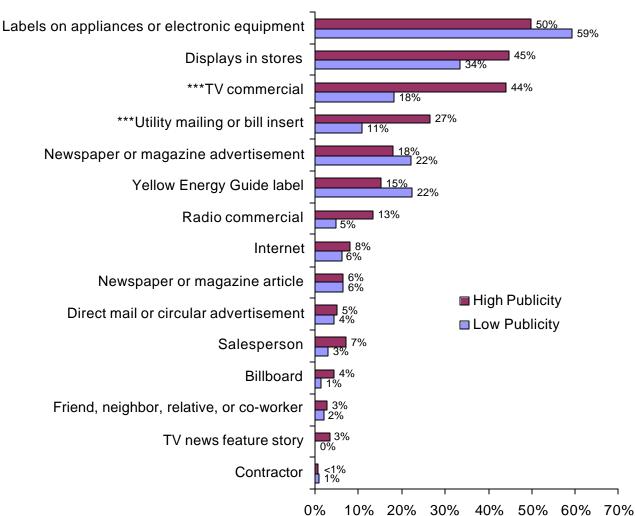


Note: SO1: "Where did you see or hear something about ENERGY STAR? Please mark all that apply."

## Sources seen by publicity category

For most sources, the proportion of households that have heard or seen something about ENERGY STAR was statistically the same for high- and low-publicity areas. For a couple of sources, however, the proportions were statistically different from each other at the 10 percent level of significance or better. A much larger proportion of households in high- than in low-publicity areas have heard or seen something about ENERGY STAR on both TV commercials and utility mailings or bill inserts (p-value<0.01).



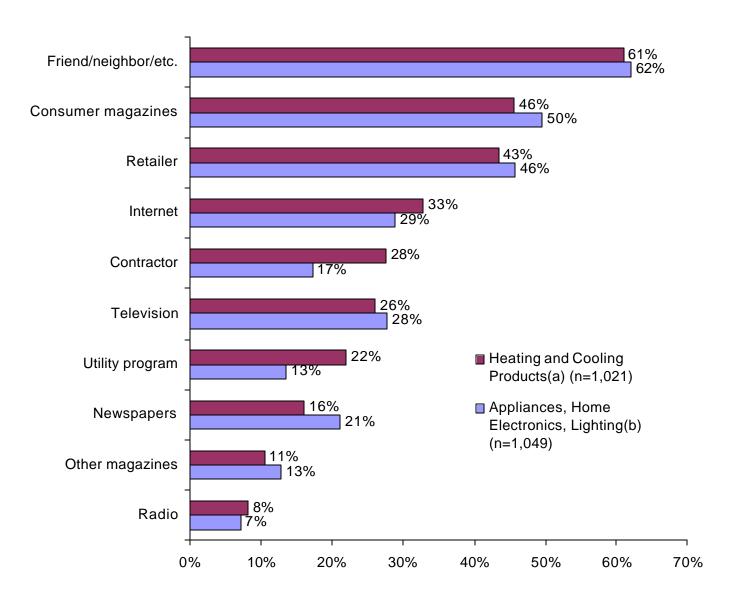


<sup>\*\*\*</sup>High- and low-publicity areas' proportions are statistically different from each other at the 1 percent level of significance (p-value<=0.01).

## **Sources consumers consult for product information**

The survey asked about the sources consumers are most likely to use to obtain information about products covered by the ENERGY STAR program. The question was asked separately for two product groups: (1) heating and cooling products and (2) home appliances, lighting, and home electronics. For both product groups, the top four sources were the same: personal acquaintances, consumer magazines, retailers, and the internet. Also, the proportion of households consulting each of these sources were similar for both product groups: personal acquaintances at about 60 percent, consumer magazines and retailers between 43 and 50 percent, and the internet at about 30 percent. For both product groups, television was also in the neighborhood of 30 percent and for heating and cooling products so were contractors. The proportion of households consulting the remaining sources for product information were 20 percent or less.

## Product Information Sources Consulted (Base = All respondents)



(a)Q13\_1: "Now, please think only about Heating and Cooling Products. Please select the source(s) of information you are most likely to use to obtain information about this product type. Please mark all that apply."

(b)Q13\_2: "Now, please think only about Home Appliances/Lighting/Home Electronics. Please select the source(s) of information you are most likely to use to obtain information about this product type. Please mark all that apply."

Considering only households that recognized the ENERGY STAR label, there are some noteworthy differences between the sources they consult for product information and where they saw or heard something about ENERGY STAR. In particular, the proportion of these households that consult personal acquaintances, salespersons or contractors, the internet, or consumer-related magazines for product information, appear to be much larger than the proportion of these households that saw or heard something about ENERGY STAR via these same sources. For these sources, the difference between the proportion of households that consult the source for product information and the proportion of households that saw or heard something about ENERGY STAR via the source ranges between about 15 and 55 percent.

ENERGY STAR Sources Compared With Sources Consulted
(Base = Recognized Aided)

	ENEDGY	Sources Consulted			
Source	ENERGY STAR Sources (n=421)	Heating and Cooling Products (n=430)		Home Appliances/Lighting/ Home Electronics (n=449)	
Newspaper or magazine advertisement	20%	Consumer Reports, other product-oriented magazines	53%	Consumer Reports, other product-oriented magazines	53%
Newspaper or		Newspaper	15%	Newspaper	16%
magazine article	7%	Other magazines	10%	Other magazines	14%
TV commercial	31%				
TV news feature story	2%		21%		21%
Radio commercial	8%		7%		8%
Utility mailing or bill insert	21%		29%		17%
Internet	8%		43%		38%
Salesperson	5%		45%		48%
Contractor	<1%		32%		17%
Friend, neighbor, relative, or co-worker	3%		58%		65%

#### APPENDIX A

#### **DETAILED METHODOLOGY**

From August through September 2002, the Consortium for Energy Efficiency (CEE) designed and fielded a household survey to obtain information at the national level on consumer awareness of the ENERGY STAR label. The survey was delivered by WebTV and was similar to last year's WebTV survey. As in the previous two years, CEE and participating members made the survey data publicly available.

This report discusses the results of the CEE 2002 ENERGY STAR Household Survey, building on prior years' survey information and focusing on the extent to which consumers recognized the ENERGY STAR label, understood its intended messages, and used (or were influenced by) the label on their energy-related purchase decisions. Research questions of interest included:

- Where do consumers see or hear about the ENERGY STAR label?
- How does increased publicity impact ENERGY STAR label recognition, understanding, and influence?
- Which key messages about the ENERGY STAR label are consumers retaining?
- Do consumers demonstrate loyalty to the ENERGY STAR label?

The survey was fielded from September 9 through October 7, 2002.

The remainder of Appendix A discusses the questionnaire design, sampling and weighting methodologies, and data collection.

## 1 Questionnaire design

In 2002, CEE conducted the ENERGY STAR survey using a questionnaire designed to be delivered by WebTV. The 2002 WebTV questionnaire was used in a survey conducted via an interactive WebTV device in the homes of people who had been randomly recruited and preselected to be representative of the population.

The data from this survey may be compared with data collected using the 2001 WebTV questionnaire, for which CEE was also responsible. Sampling for the survey is discussed in Section 2 and data collection is discussed in Section 3.

The committee had several broad objectives in designing the 2002 questionnaires, including:

- To maintain consistency with the CEE 2000 and 2001 mail survey and the 2001 WebTV survey<sup>2</sup>.
- To fine-tune the questionnaire based on lessons learned from the analysis of the CEE 2000 survey, focusing on achieving the greatest value from the analysis of the CEE 2001 survey.

The 2002 WebTV questionnaire addressed the following:

- Respondent recognition of the ENERGY STAR label
- Understanding of, and key messages communicated by, the ENERGY STAR label
- Sources of information about ENERGY STAR
- Products on which respondents have seen the label
- Products that respondents have purchased in the past year
- Products that respondents have purchased on which they have seen the label (or on whose packaging or instructions they have seen the label)
- Influence of the presence or absence of the label on the purchase decision
- Whether purchases of ENERGY STAR labeled products involved rebates or reduced-rate financing
- Likelihood of having purchased ENERGY STAR labeled products in the absence of rebates or reduced-rate financing
- Likely sources of information about product categories
- Demographic questions (most of the demographic questions were not asked in the WebTV survey, because demographic characteristics of the respondents were already on file.)
- Likelihood to recommend ENERGY STAR labeled products to a friend
- Recognition and understanding of the yellow *EnergyGuide* labels
  The 2002 WebTV questionnaire is very similar to the 2001 WebTV questionnaire. The only difference is the addition of two questions.

<sup>&</sup>lt;sup>2</sup> The CEE committee plans to continue fielding the WebTV survey in the future in lieu of the mail survey.

- oq20. How many bedrooms do you have in your home?
- q6a. Have you or someone else in your household been shopping in a store in the last 12 months for any of the products listed below?

Heating and Cooling Products

Central air conditioner

Furnace or boiler

Heat pump

Thermostat

Room air conditioner

Home Office Equipment

Computer or monitor

Computer printer

Copying machine

Fax machine

Scanner

None of these products

Home Appliances/Lighting

Dishwasher

Refrigerator

Lighting fixture

Washing machine

Compact fluorescent light bulb

Microwave oven

Home Electronics

Television

VCR

Audio product

None of these products

**Building Materials** 

Window

Door

Skylight

Insulation

Roofing material

• q6b. Have you or someone else in your household been shopping for a newly built home in the last 12 months?

The interactive format of a WebTV questionnaire allows questions to be asked in a way that is not possible with a printed questionnaire. On printed questionnaires respondents can see questions in advance. For example, while the 2000 and 2001 mail questionnaires begin by showing the ENERGY STAR label and asking about understanding and whether they recognize it before asking other questions, respondents can still potentially educate themselves in a limited way about the ENERGY STAR label by reading the survey before completing it, affecting their responses. The 2001 and 2002 WebTV questionnaires (after questions about the yellow *EnergyGuide* label), however, ask respondents—without showing the label—whether they have ever seen or heard of the ENERGY STAR label. Responses to this question should thus be comparable to those obtained through a telephone survey.

The WebTV questionnaire then shows the ENERGY STAR label (which is obviously not possible with the telephone questionnaire) and asks about understanding and recognition. Responses to this question should thus be comparable to those obtained through the 2001 mail survey. Other differences between the mail questionnaires and the WebTV questionnaire are that the latter—much like a telephone questionnaire using computer-assisted telephone interviewing (CATI)—can program lines of questions based on responses to earlier questions. For example, WebTV respondents who say they have bought a given product in the past year can then be asked whether that specific product (or its packaging or instructions) had the ENERGY STAR label.

#### 2 Sampling

## 2.1 Designated Marketing Areas Publicity Categories

The same publicity classification procedure used last year was used this year. In both 2001 and 2002, a Nielsen Designated Marketing Area <sup>®</sup>(DMA) was classified as high publicity, low publicity, or other using the following criteria:

- **High publicity:** At least two *recent* years of *sustained* promotions and publicity from non-federal activities
- **Low publicity:** Federal campaign activities only and no *significant* regional program sponsor activities
- Other: All other DMAs

This classification procedure identifies three publicity categories and provides clear and verifiable definitions. The key working definitions are:

- **Recent**: The two years of activity must include the time of the survey fielding
- **Sustained**: The two years of activity must be continuous
- Significant: In addition to any direct federal publicity efforts<sup>3</sup>, publicity efforts must include a deliberate and multifaceted regional program sponsor investment in ENERGY STAR programming, such as direct marketing and promotional efforts

These definitions are sufficiently operational to be applicable to future survey efforts, and can be modified by simply increasing the duration of sustained high publicity. The publicity-level assignments are detailed in the table below, followed by a table of supplemental CEE member sponsor areas.

**Top 57 Designated Market Areas (Excluding Sponsor Area)** 

Rank	Designated Market Area (DMA)	# TV Households 2002-2003 NOT in Sponsor Area	% of US TV Households	Publicity Category
1	New York	7,282,320	6.8%	High
2	Los Angeles	5,318,040	5.0%	High
3	Chicago	3,351,330	3.1%	Other
4	Philadelphia	2,830,470	2.7%	Other
5	San Francisco-Oak-San Jose	2,436,220	2.3%	High
6	Boston (Manchester)	411,207	2.2%	High
7	Dallas-Ft. Worth	2,195,540	2.1%	Other
8	Washington, DC (Hagerstown)	2,169,230	2.0%	Other
9	Atlanta	1,971,180	1.8%	Low
10	Detroit	1,899,910	1.8%	Other
11	Houston	1,814,140	1.7%	Other
12	Seattle-Tacoma	1,659,100	1.6%	High
13	Tampa-St. Pete (Sarasota)	1,620,110	1.5%	Low
14	Minneapolis-St. Paul	1,594,740	1.5%	Other
15	Cleveland-Akron (Canton)	1,528,840	1.4%	Other
16	Phoenix	1,524,130	1.4%	Other
17	Miami-Ft. Lauderdale	1,486,860	1.4%	Other
18	Denver	1,366,250	1.3%	Other
19	Sacramnto-Stktn-Modesto	1,227,600	1.2%	High
20	Orlando-Daytona Bch-Melbrn	1,224,470	1.1%	Low
21	Pittsburgh	1,165,660	1.1%	Other
22	St. Louis	1,156,370	1.1%	Other

During the September 2001 to September 2002 period, EPA launched the first of three new television national Public Service Announcements (PSAs) as part of its *Change* campaign. The *Change* campaign also included continued distribution of several radio and print PSAs as a component of its overall outreach strategy.

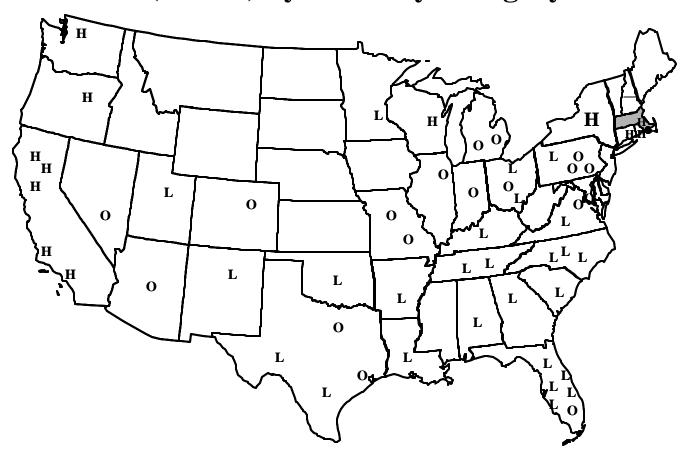
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Rank	Designated Market Area (DMA)	# TV Households 2002-2003 NOT in Sponsor Area	% of US TV Households	Publicity Category
23	Portland, OR	1,061,080	1.0%	High
24	Baltimore	1,060,450	1.0%	Other
25	Indianapolis	1,019,870	1.0%	Other
26	San Diego	1,004,220	0.9%	High
27	Hartford & New Haven	980,410	0.9%	High
28	Charlotte	962,540	0.9%	Low
29	Raleigh-Durham (Fayetvlle)	929,460	0.9%	Low
30	Nashville	880,670	0.8%	Low
31	Milwaukee	860,350	0.8%	High
32	Cincinnati	854,250	0.8%	Low
33	Kansas City	852,510	0.8%	Other
34	Columbus, OH	835,780	0.8%	Other
35	Greenvll-Spart-Ashevll-And	792,110	0.7%	Low
36	Salt Lake City	769,230	0.7%	Other
37	San Antonio	718,730	0.7%	Low
38	Grand Rapids-Kalmzoo-B.Crk	713,800	0.7%	Other
39	West Palm Beach-Ft. Pierce	700,850	0.7%	Low
40	Birmingham (Ann and Tusc)	690,030	0.6%	Low
41	Norfolk-Portsmth-Newpt Nws	677,610	0.6%	Low
42	New Orleans	658,830	0.6%	Low
43	Memphis	653,840	0.6%	Low
44	Buffalo	639,190	0.6%	High
45	Oklahoma City	636,970	0.6%	Low
46	Greensboro-H.Point-W.Salem	634,140	0.6%	Low
47	Harrisburg-Lncstr-Leb-York	626,660	0.6%	Other
48	Providence-New Bedford	411,482	0.6%	High
49	Albuquerque-Santa Fe	620,230	0.6%	Low
50	Louisville	612,300	0.6%	Other
51	Jacksonville, Brunswick	587,200	0.6%	Low
52	Las Vegas	585,440	0.5%	Other
53	Wilkes Barre-Scranton	580,290	0.5%	Low
54	Austin	552,060	0.5%	Other
55	Albany-Schenectady-Troy	477,032	0.5%	High
56	Little Rock-Pine Bluff	523,810	0.5%	Low
57	Fresno-Visalia	519,330	0.5%	High
Total		72,916,471	70.4%	

# **Sponsor Area**

Sponsor Area	Publicity Category	Comments
Massachusetts	High	Includes parts of Albany-Schnectady-Troy DMA (Rank 55): Berkshire County; Boston DMA (Rank 6): Barnstable, Dukes; Essex, Middlesex, Nantucket, Norfolk, Plymouth, Suffolk, and Worcestor Counties; Providence-New Bedford (Rank 48): Bristol County

# Map of Top 57 Designated Market Areas (DMAs) by Publicity Category<sup>4</sup>



H "High" publicity category

L "Low" publicity category

O "Other" publicity category

☐ CEE sponsor area

<sup>&</sup>lt;sup>4</sup> Neither Alaska or Hawaii contained DMAs ranking 57 or below.

# 2.2 Sample Design

The sample is a national sample. The sampling frame is all households in the largest DMAs that account for approximately 70 percent of U.S. television households. In 2002, the 57 largest DMAs account for approximately 70 percent of U.S. television households. In addition, one CEE member sponsored more intensive sampling (an oversample) for their state. This state is referred to as a "sponsor area." For the sponsor area, the frame was not limited to the large DMAs, but included the entire state. Thus, the complete frame for the study was the combination of the largest DMAs and any portion of the sponsor areas that fell outside these DMAs.

The sample is stratified by publicity category and sponsor area. The three publicity categories and one sponsor area result in four strata. Households in the largest and parts of the largest DMAs that are not in the sponsor area were assigned to one of the publicity category strata. Households in the sponsor area were assigned to the sponsor area stratum.

Each publicity category was allocated approximately 266 sampling points. The CEE member who funded the oversample for their sponsor area determined the number of sampling points allocated to their stratum. A larger sample was selected to receive the survey to allow for nonresponse.

### 2.3 Weighting Procedures

The weights employed in the analysis are the weights developed by Knowledge Networks, the company that provides the WebTV survey service, multiplied by the standard sampling weights. Within each stratum, Knowledge Networks calculates weights to account for differences in the WebTV panel from the study population and survey nonresponse. That is, the WebTV weights incorporate post-stratification to account for underlying differences between the recruited panel and the study population, as well as differences in response rates for this particular survey. Both of these adjustments are based on geographic and demographic characteristics known for both the population and the panel. These weights are designed to scale up the under-represented groups and scale down the over-represented groups.

The weights provided by Knowledge Networks correct for disproportionate representation within a stratum, but do not correct for having higher (lower) overall sampling rates in one stratum than in another. Therefore, an additional weighting factor is needed to correct for the relative proportions of the sampling strata. The additional weighting factor is the ratio of population size to sample size in a stratum, that is, the standard sampling weight.

### 3 Data Collection

### 3.1 Survey Implementation

The survey was deployed on September 9 and closed on October 7, 2002.

### 3.2 Response Rates

For WebTV, the *return rate* is the ratio of the number completed to the number of panel members who were asked to complete the survey. While this number is quite high, it must be adjusted by the *recruitment rate*, that is, the number of households that agreed to participate in the WebTV panel, as a proportion of the number of households asked to participate. Thus, the WebTV response rate is the product of the return rate and the recruitment rate. This product is equivalent to the ratio of the number of surveys completed to the number of households that were offered the opportunity to be in the study. The WebTV response rate was 42 percent (based on the same recruitment rate as last year, 56 percent). This level of response is usual for a WebTV survey.

**Survey Response Rate** 

	# Households
Sendout/Requested	1,541
Completed	1,168
Return Rate (Total)	76%
Recruitment Rate	56%
Response Rate	42%

#### APPENDIX B

#### **DEMOGRAPHICS**

The analysis presented in this appendix suggests the weighted survey results are a reasonable representation of the study population, which are all U.S. households. Professional survey and data collection firms make significant efforts to ensure the rigor of their methods and to produce the highest quality results. However, in any survey effort, the persons who respond to the survey tend to be different from those who do not respond. While Knowledge Networks, the company that maintains the WebTV panel, strives to create a representative panel for its WebTV frame, the respondent base will contain subjects and their associated biases that are receptive to the WebTV incentive for service trade off.

The weights employed in the analysis attempt to account for survey nonresponse and differences in the WebTV panel from the study population. To the extent this effort is successful, the distribution of various demographic characteristics based on the weighted survey data will be similar to the distribution based on national Census data. For most demographic characteristics, the two distributions are similar. This suggests the weighted survey results are a reasonable representation of the study population. A summary of the demographic characteristics compared is provided in the table below and the detailed comparisons are provided in the tables at the end of this appendix.

**Summary of Distribution Comparisons** 

Demographic Characteristic	Largest Difference (Absolute Value): Survey Estimate Less Census %	
Householder/respondent age	75 or older	-6.4%
Household annual income	\$25,000-\$49,999	4.5%
Number of persons in household	One	-11.4%
Householder/respondent gender	Female	0.6%
Dwelling type	Apt. bldg.	-7.8%
Own/rent	Rent	4.9%

The largest differences (in absolute value) between the weighted survey data and the national Census data concern the number of persons in a household and dwelling type. One-person households are 15 percent of households in the weighted survey data compared with 26 percent of U.S. households, for a difference of 11 percent. Households living in apartment buildings are 14 percent of households in the weighted survey data compared with 22 percent of U.S. households, for a difference of about 8 percent. Neither the under representation of one-person households nor households living in apartment buildings is expected to bias the survey results in a particular direction. For the remaining demographic characteristics, the largest differences between the weighted survey data and the national Census data range between 1 and 6 percent.

#### **Household Size Distribution**

Number of Persons in Household	Census % Dwelling Units <sup>a</sup>	Survey Estimate Less Census % Dwelling Units
One	27%	-11.4%
Two	33%	5.5%
Three	16%	3.4%
Four	15%	0.3%
Five or more	10%	2.2%
Total	100%	

<sup>&</sup>lt;sup>a</sup> U.S. Census Bureau, American Housing Survey: 2001, Table 2-9.

# Age Distribution

Householder/ Respondent Age	Census % Householders <sup>a</sup>	Survey Estimate Less Census % Householders
24 or younger <sup>b</sup>	6%	5.1%
25-34	18%	2.0%
35-44	23%	0.6%
45-54	20%	1.5%
55-64	13%	-2.6%
65-74	10%	-0.3%
75 or older	10%	-6.4%
Total (%)	100%	
Total (1,000s)	106,407	

<sup>&</sup>lt;sup>a</sup> U.S. Census Bureau, American Housing Survey: 2001, Table 2-9.

### **Gender Distribution**

Gender Distribution			
Householder/Respondent Gender	Census % Householders <sup>a</sup>	Survey Estimate Less Census % Householders	
Female	51%	0.6%	
Male	49%	-0.6%	
Total (%)	100%		
Total (1,000s)	281,422		

<sup>&</sup>lt;sup>a</sup> U.S. Census Bureau, Census 2000.

<sup>&</sup>lt;sup>b</sup> Census, 24 or younger; WebTV 2002, 18-24.

### **Dwelling Type Distribution**

Dwelling Type	Census % Dwelling Units <sup>a</sup>	Survey Estimate Less Census % Dwelling Units
Single-family, unattached	60%	6.8%
Single-family, attached	7%	3.7%
Apt. bldg. (>=2 units) <sup>b</sup>	22%	-7.8%
Mobile home	7%	-1.4%
Other	5%	-1.4%
Total (%)	100%	
Total (1,000s)	111,730	

<sup>&</sup>lt;sup>a</sup> U.S. Census Bureau, American Housing Survey: 2001, Table 2-1.

### **Own/Rent Distribution**

Own/Rent	Census % Householders <sup>a</sup>	Survey Estimate Less Census % Households
Own	68%	-4.9%
Rent	32%	4.9%
Total (%)	100%	
Total (1,000s)	106,407	

<sup>&</sup>lt;sup>a</sup> U.S. Census Bureau, American Housing Survey: 2001, Table 2-1.

#### **Income Distribution**

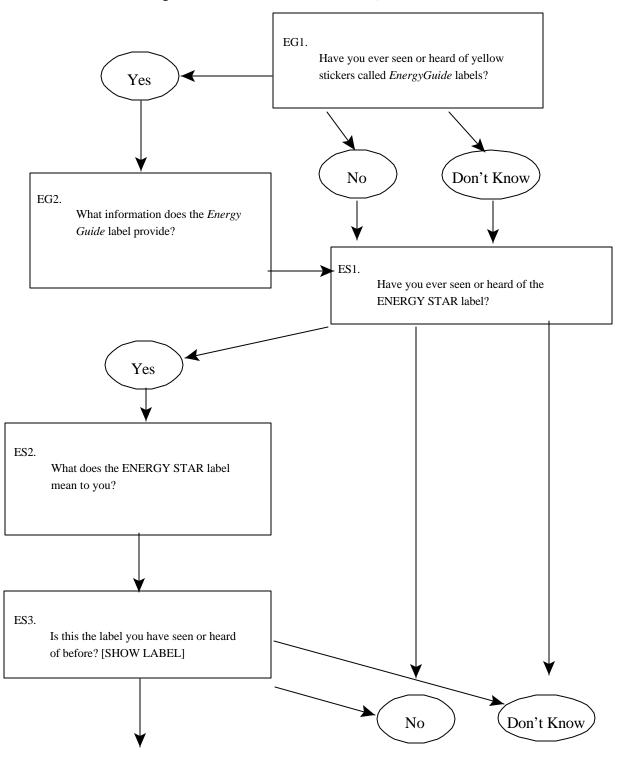
Total Household Annual Income (before taxes)	Census % Households <sup>a</sup>	Survey Estimate Less Census % Households
Less than \$15,000	16%	-0.8%
\$15,000-\$24,999	13%	-1.7%
\$25,000-\$49,999	28%	4.5%
\$50,000-\$74,999	19%	1.7%
\$75,000 and over	24%	-3.7%
Total (%)	100%	
Total (1,000s)	106,417	

<sup>&</sup>lt;sup>a</sup> U.S. Census Bureau, Current Population Reports, P60-2136, Money Income in the United States: 2000.

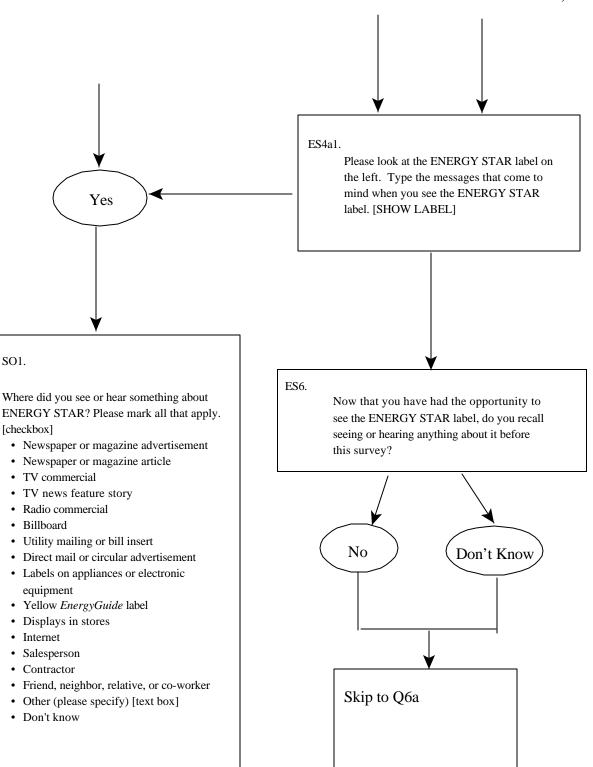
<sup>&</sup>lt;sup>b</sup> Census, 2 or more units; WebTV 2002, 4 or more units.

### **APPENDIX C**

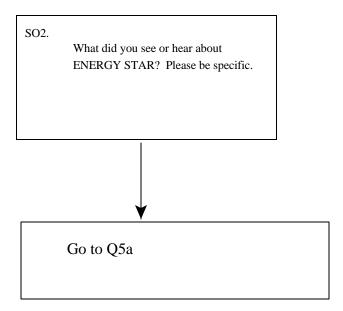
# 2002 CEE WebTV QUESTIONNAIRE - final version, 9/06/02



# THE CADMUS GROUP, INC.



SO1.



Q5(a). Now we're going to ask you about several groups of products. As you review the list, please select each of the products, product literature, or packaging on which you have seen the ENERGY STAR label.

Heating and Cooling Furnace or boiler Fax machine

Products Computer printer Room air conditioner

Home Office Equipment Heat pump Scanner

Central air conditioner Copying machine None of these products

Computer or monitor Thermostat

Q5(b). Please continue reviewing the lists of products below, and select each of the products, product literature, or packaging on which you have seen the ENERGY STAR label.

Home Appliances Refrigerator Compact fluorescent light

Lighting VCR bulb

Home Electronics Lighting fixture Microwave oven
Dishwasher Audio product None of these products

Television Washing machine

•

Q5(c). Finally, please review the last of the product lists below and select each of the products, product literature, or packaging on which you have seen the ENERGY STAR label.

Building Materials Door None of these products

Buildings Skylight
Window Insulation
Newly built home Roofing material



Q6(a.) Have you or someone else in your household been shopping in a store in the last 12 months for any of the products listed below?

Yes

No

Don't Know

# **Heating and Cooling Products**

Central air conditioner

Furnace or boiler

Heat pump

Thermostat

Room air conditioner

### Home Office Equipment

Computer or monitor

Computer printer

Copying machine

Fax machine

Scanner

### Home Appliances/Lighting

Dishwasher

Refrigerator

Lighting fixture

Washing machine

Compact fluorescent light bulb

Microwave oven

#### Home Electronics

Television

**VCR** 

Audio product

### **Building Materials**

Window

Door

Skylight

Insulation

Roofing material



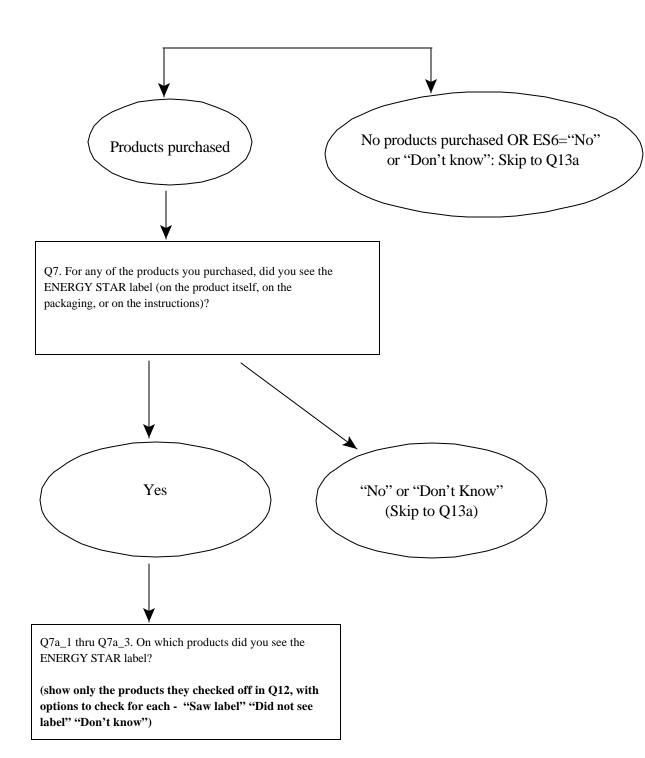
Q6b. Have you or someone else in your household been shopping for a <u>newly built</u> home in the last 12 months?

Yes

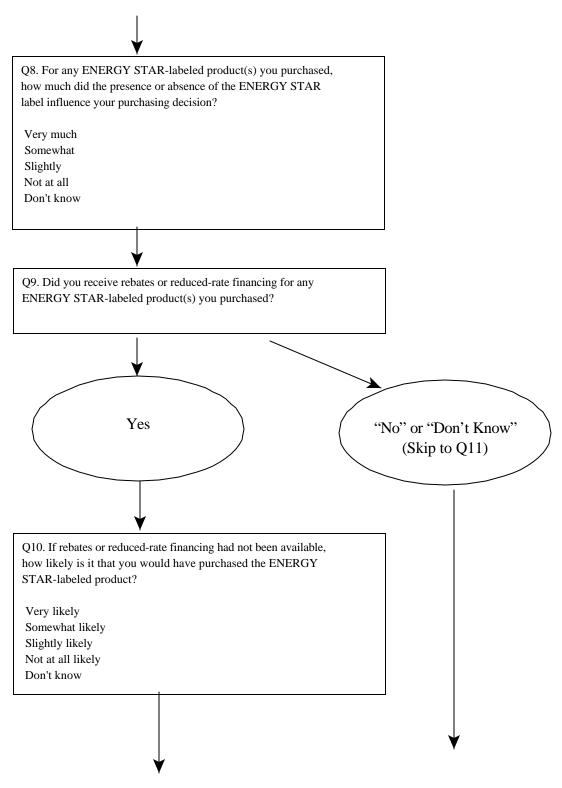
No

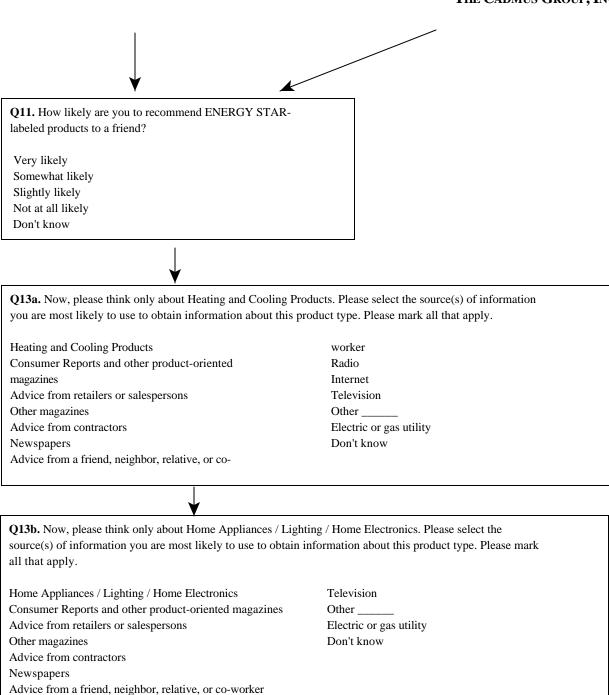
# THE CADMUS GROUP, INC.

Q12(a). Please look at each of the groups of products again. Which of these products have you purchased in the last 12 months? Please check all that apply. Copying machine Heating and Cooling Computer or monitor Products Furnace or boiler Thermostat Fax machine Home Office Equipment Computer printer Central air conditioner Heat pump Room air conditioner Q12(b). Please continue reviewing the lists of products below. Which of these products have you purchased in the last 12 months? Please check all that apply. Home Appliances/Lighting **VCR** Microwave oven Home Electronics Lighting fixture None of these products Dishwasher Audio product Television Washing machine Compact fluorescent light bulb Refrigerator Q12(c). Finally, please review the last of the product lists below. Which of these products have you purchased in the last 12 months? Please check all that apply. Insulation **Building Materials** Buildings Roofing material Window None of these products Newly built home Door Skylight



# THE CADMUS GROUP, INC.





Go to demographic and closing questions.

Radio Internet